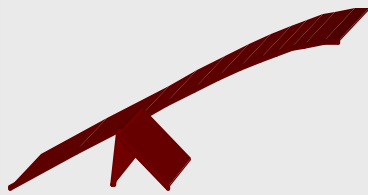# What Will Take Place Outside My Project's Boundaries?

Kasse Initiatives

**CMMI Technology Conference
November 2001
Denver, Colorado**

Welcome

WelKom

Huan Yín

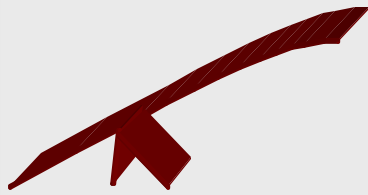Bienvenido

Bienvenue

Wilkommen

**? ? ? ? S ? ? ?S? ? ?**

Bienvenuto

Välkommen

Tervetuloa

Witamy

Subcontracting is Here to Stay

◆ Subcontracting or working with suppliers is becoming a common if uncomfortable fact of life

◆ Frequently companies do not have their own requirements engineering, requirements management or project management under control and are now faced with managing suppliers in addition to their own project activities

◆ Companies that swore they would never subcontract yesterday are trying to deal with their suppliers today
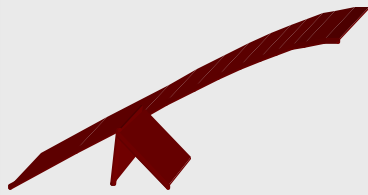
◆ Either you control your suppliers or they control you!
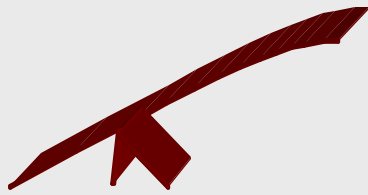
What and Why Do We Subcontract?
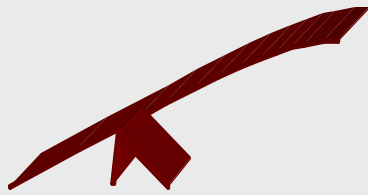
What and Why Do We Subcontract?

◆ What we don't know how to do

◆ What we know how to do but don't have the technology to do

≥ What someone else knows how to do better

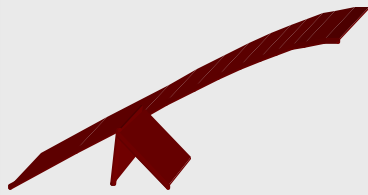≥ What someone else knows how to do cheaper and with higher quality

What and Why Do We Subcontract? - 2

◆ All or part of the Software Development Lifecycle

◆ Insufficient in-house resources

◆ To Create a Strategic Alliance

◆ When someone else already has a prototype, similar product...

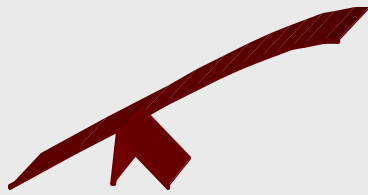◆ In order to meet business objectives, we sometimes have no choice

Terminology

◆ Prime Contractor: the organization that is buying the software project work from the subcontractor ---Buyer

◆ Subcontractor: is the organization that is selling the software project work to the prime contractor ---Supplier
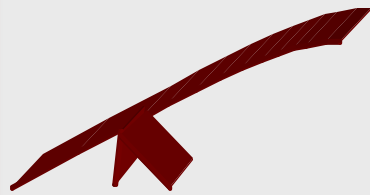
Source of Problems With Subcontracting

◆ Buyer

  ≥ Sets unreasonable completion dates

  ≥ Enforces a budget limit without understanding the full scope of the problem

  ≥ Expects a "cast in concrete" initial project cost and plan without providing a clear definition of the requirements to the Supplier

  ≥ Exhibits an "us against them" attitude - conflicts

  ≥ Level of participation in the lifecycle is negligible

# Source of Problems With Subcontracting - 2

◆ Supplier

- ≥ Fails to identify and specify assumptions and contract performance constraints in plans/proposal

- ≥ Agrees to the Buyer imposed limits too readily – fails to effectively negotiate a win-win solution for both parties

- ≥ Backs into imposed schedule, and therefore skimps on quality over the life of the project

- ≥ Fails to fully identify and manage risks
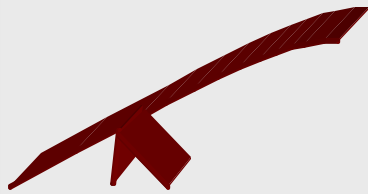
How to Succeed

◆ Subcontracting is a collaborative effort

≥ Buyer is **not** absolved of ensuring product quality

≥ **Both** buyer and Supplier need to **_understand_** and **_agree_** to the size and complexity of the overall effort

≥ Buyer and Supplier must **negotiate** to ensure that the delivered functionality (and quality) is within allowable schedules and cost
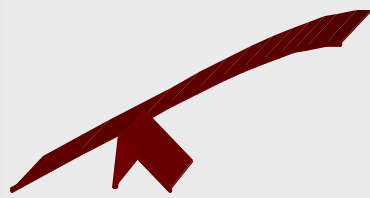
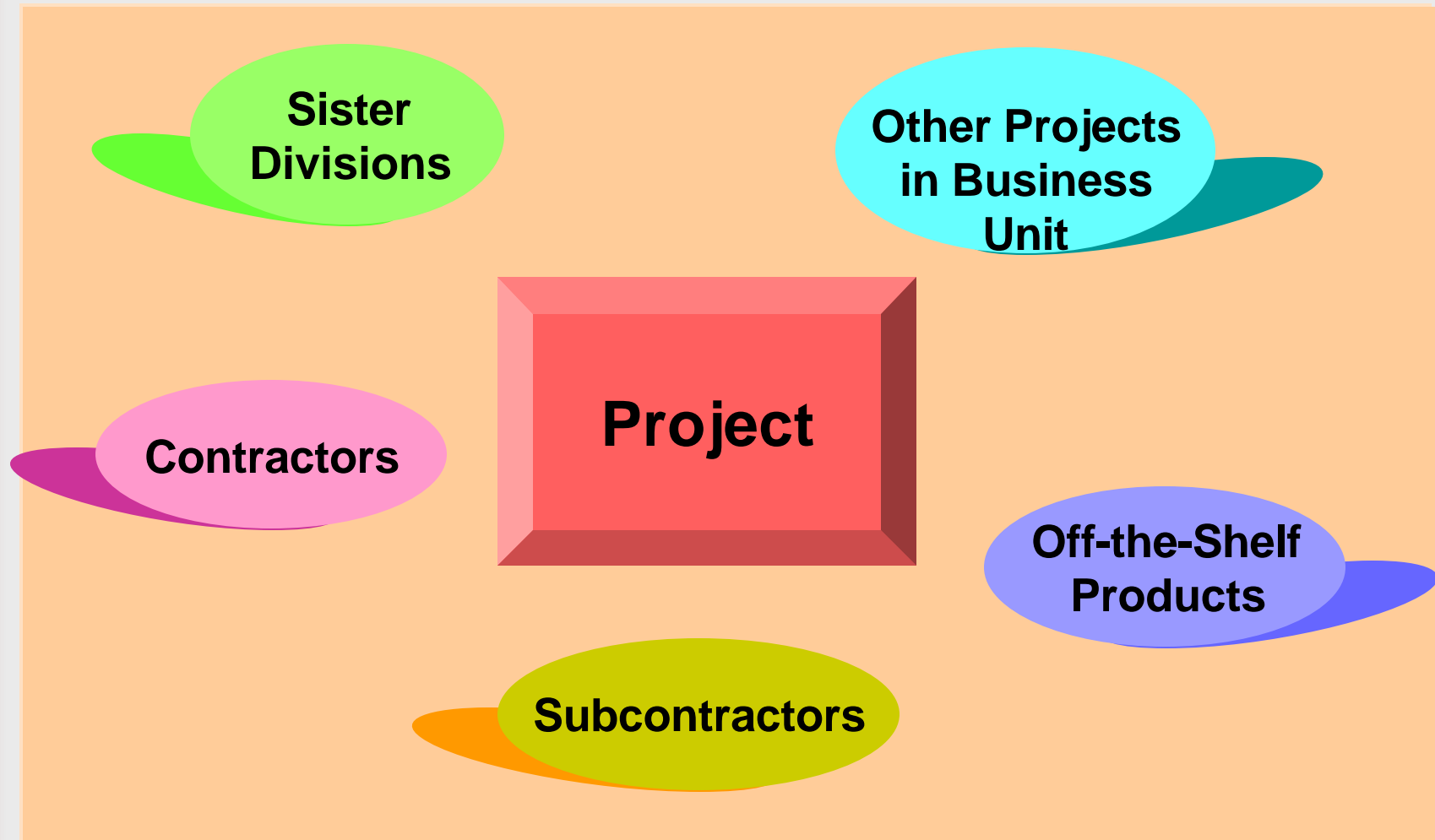## Cooperation…………..and Teamwork
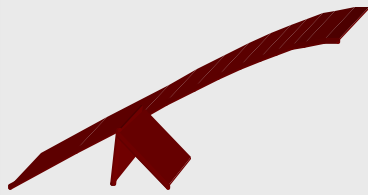
Supplier Agreement Management Overview
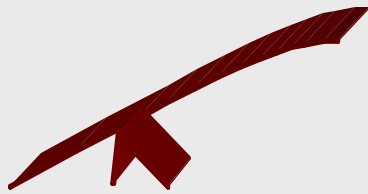
Supplier Agreement Management Overview

◆ The term **"supplier"** is used to identify an internal or external organization that develops, manufactures, tests, or supports products being developed or maintained that will be delivered to the customer

◆ Suppliers may take many forms including:

$\geq$ In-house vendors

$\geq$ Other projects

$\geq$ Fabrication capabilities and laboratories

$\geq$ Commercial vendors

$\geq$ Sister divisions

$\geq$ Commercial-Off-The-Shelf (COTS) Software

$\geq$ Contractors (body shopping)

Supplier Agreement Management Overview - 2

Sister Divisions

Other Projects in Business Unit

Contractors

Project

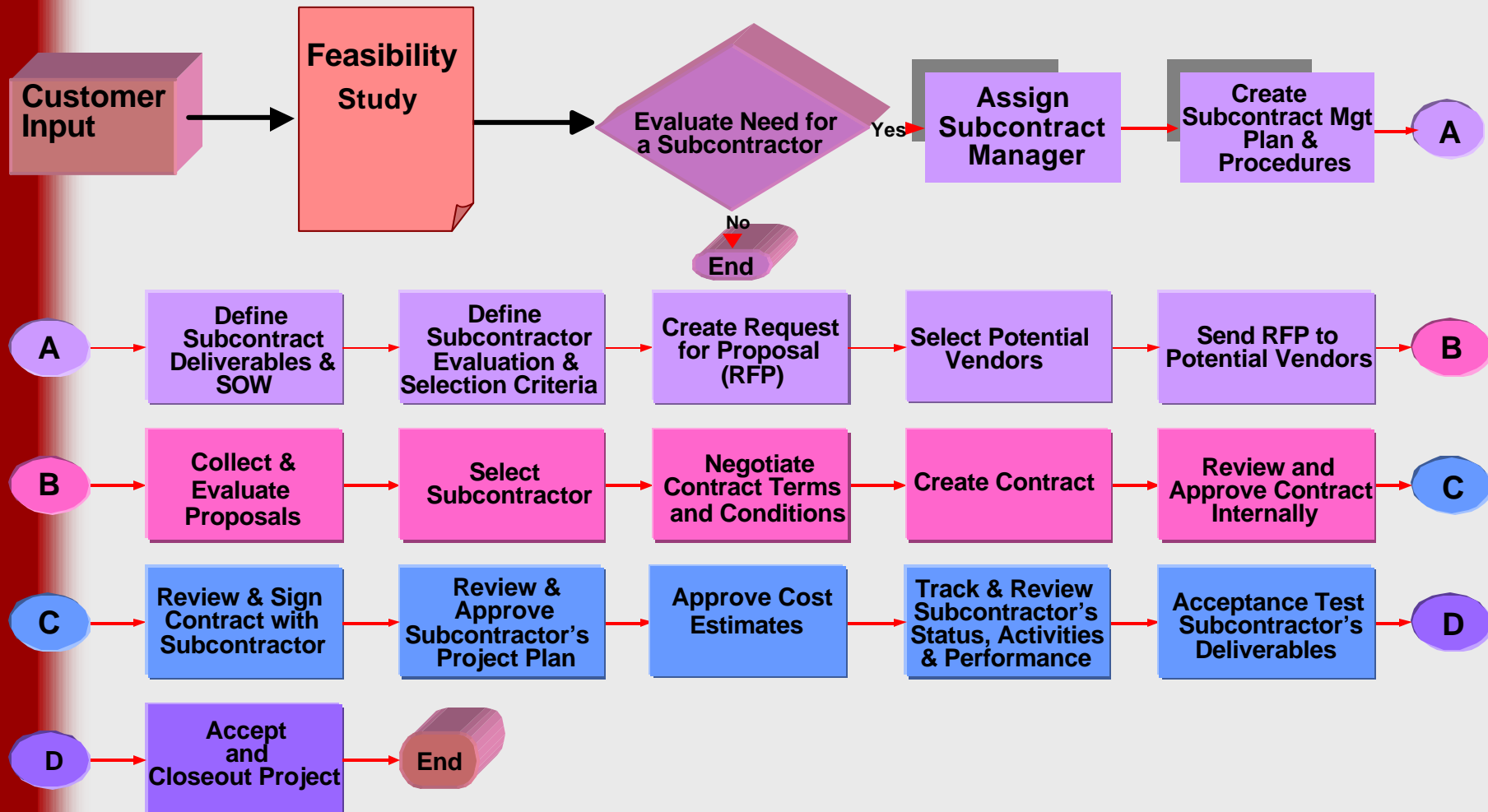Off-the-Shelf Products

Subcontractors

© 2001 Kasse Initiatives, LLC
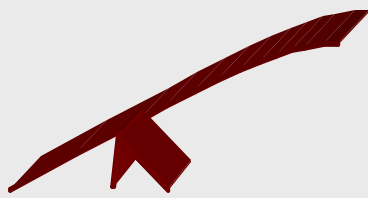
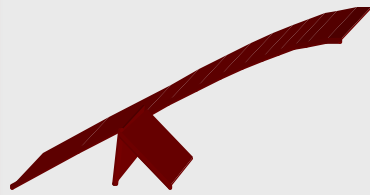# Supplier Agreement Management Overview - 3
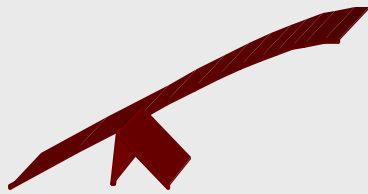
◆ Supplier Agreement Management involves the following activities:

≥ Identifying the products and services to be acquired

≥ Selecting suppliers

≥ Establishing and maintaining requirements and agreements with suppliers

≥ Overseeing supplier performance

≥ Accepting delivery of the supplied products

≥ Arranging for maintenance and support of the supplier products

Subcontract Management Process Flow

```
Customer Input  →  Feasibility Study  →  Evaluate Need for a Subcontractor
```

Evaluate Need for a Subcontractor — **Yes** → Assign Subcontract Manager → Create Subcontract Mgt Plan & Procedures → **A**

Evaluate Need for a Subcontractor — **No** → **End**

A → Define Subcontract Deliverables & SOW → Define Subcontractor Evaluation & Selection Criteria → Create Request for Proposal (RFP) → Select Potential Vendors → Send RFP to Potential Vendors → **B**

B → Collect & Evaluate Proposals → Select Subcontractor → Negotiate Contract Terms and Conditions → Create Contract → Review and Approve Contract Internally → **C**

C → Review & Sign Contract with Subcontractor → Review & Approve Subcontractor's Project Plan → Approve Cost Estimates → Track & Review Subcontractor's Status, Activities & Performance → Acceptance Test Subcontractor's Deliverables → **D**

**D** → Accept and Closeout Project → **End**

Feasibility Study

Purpose of Feasibility Study

◆ Understand the "customer's" requirements

◆ Determine the goals and scope

◆ Develop a preliminary Work Breakdown Structure

◆ Prepare a Preliminary Project Plan for management

  ≥ Enough information for senior management to make a go/no-go decision, and/or

    ↑ to decide to (sub)contract out some or all of the work

   ↑ to determine if an off-the-shelf solution is more cost effective
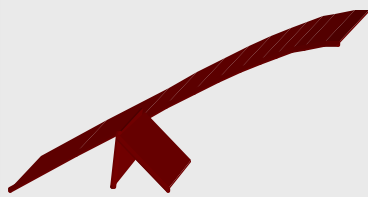
Determine Needs "Outside" Project Boundaries

◆ Determine which portions of project work could or should be conducted by suppliers outside of project boundaries

  ≥ Frequently referred to as "make-or-buy analysis"

◆ Factors that influence the make-or-buy decision include:

  ≥ Functions the products or services will provide and how these functions will fit into the project

  ≥ Available project resources and skills

  ≥ Costs of acquiring versus developing internally

  ≥ Critical delivery and integration dates
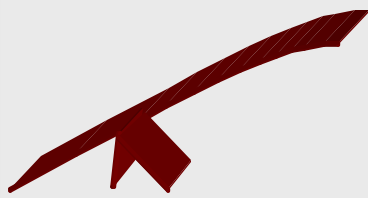
Determine Needs "Outside" Project Boundaries - 2

$\geq$ Strategic business alliances

$\geq$ Market research of available products and services, including off-the-shelf products and services

$\geq$ Functionality and quality of available products

$\geq$ Skills and capabilities of potential suppliers

$\geq$ Impact on core competencies

$\geq$ Licenses, warrantees, responsibilities, and limitations associated with products and services being acquired
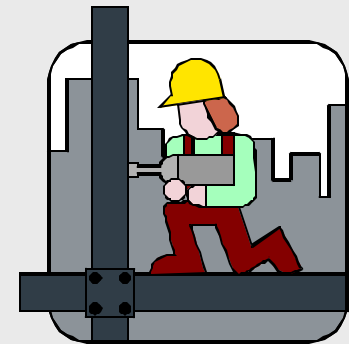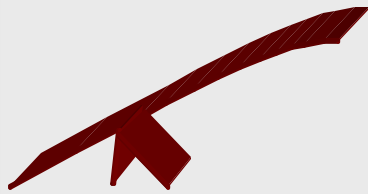
$\geq$ Product availability

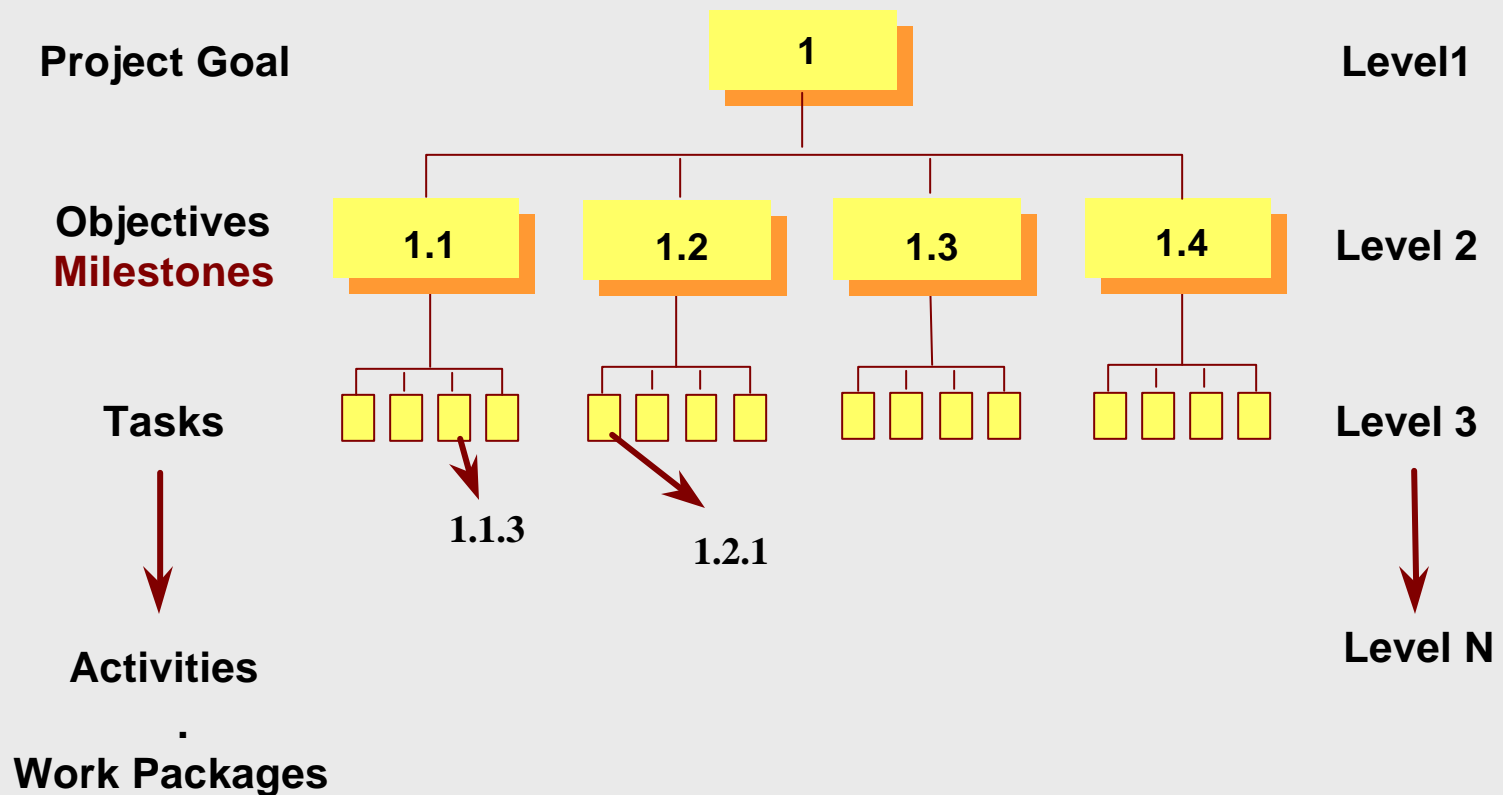$\geq$ Proprietary issues
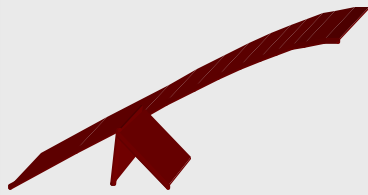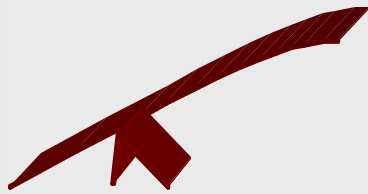
Develop Work Breakdown Structure
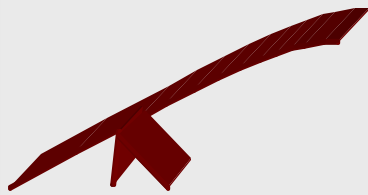
What Is the WBS?

◆ A WBS is a top-down chart or table that represents a hierarchical decomposition of all work to be done in a project.

  ≥ Typically displayed graphically as a chart, but can also be displayed in an outline form.

◆ Remember to include activities for coordinating with external organizations

  ≥ Inputs

  ≥ Reviews

  ≥ Deliverables

Project WBS Breakdown

Project Goal [1] **Level1**

Objectives
Milestones [1.1] [1.2] [1.3] [1.4] **Level 2**

Tasks **Level 3**

1.1.3

1.2.1

Activities

.

**Work Packages**

Level N

Work Breakdown Structure

◆ The work breakdown structure (WBS) divides the overall project into an interconnected set of manageable components

> ≥ The WBS is used as the underlying framework to plan, organize, and control the work done on the project

> ≥ The WBS should be based on the product architecture

> ≥ Work products should be identified in sufficient detail to specify estimates of the project tasks, responsibilities, and schedule

> ≥ Work products that will be externally acquired should be identified
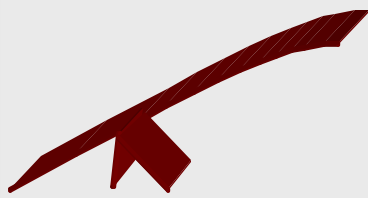
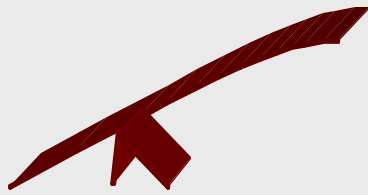# Work Breakdown Structure – 2
(Example Contents)

◆ The work breakdown structure normally contains

≥ Scope of the work based on the requirements

↑ technical goals and objectives

↑ identification of customers and end users

↑ imposed standards

↑ assigned responsibilities

↑ cost and schedule constraints and goals

↑ dependencies between the project and other organizations

↑ resource constraints

↑ other constraints for development or maintenance
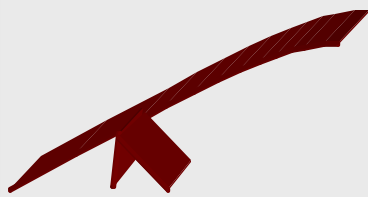
Work Breakdown Structure – 3
(Example Contents)

- ≥ Identified risks
- ≥ Deliverables
- ≥ Supporting activities and associated plans
  - ↑ Configuration Management
  - ↑ Quality Assurance
- ≥ Required skills and knowledge
- ≥ Integration and life-cycle management of non-developmental items
- ≥ Work products that will be externally acquired
- ≥ Work products that will be reused
- ≥ Work products that will be placed under configuration management control

Establishing Supplier Requirements
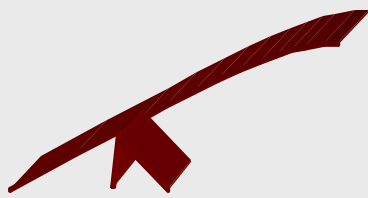
Establish Requirements for Products Being Acquired

◆ The requirements for the products being acquired might come from:
- ≥ The project's Work Breakdown Structure
- ≥ Project's systems requirements
- ≥ Project's software requirements
- ≥ Project Plan
- ≥ Project support requirements
- ≥ Standards and procedures
- ≥ Configuration Management Plan
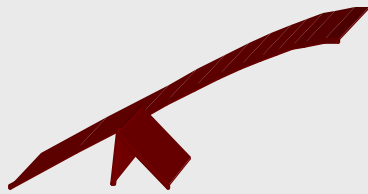- ≥ Quality Assurance Plan
- ≥ Systems Test Plan
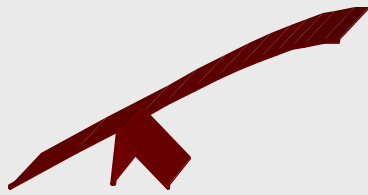
Define Technical Requirements Tasking

◆ Identify all requirements, compliance specifications, design criteria, and other documentation to be appended to the SOW

- ≥ Work to be contracted and the standards and procedures to be followed
- ≥ Tailored to the acquisition strategy for the software development project

◆ **Derived from the project's requirements, plans, standards, and procedures**
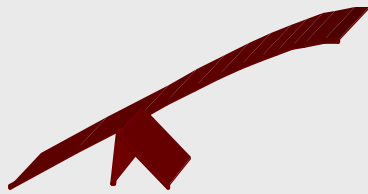
Define Process Requirements

◆ Identify software engineering **process** requirements to be included in the SOW. These include:

  ≥ Preparation of a Project Management Plan
  ≥ Preparation of Risk Management Plan
  ≥ Preparation of a Integration and Systems Test Plan
  ≥ Preparation of a Quality Assurance Plan
  ≥ Preparation of a Configuration Management Plan
  ≥ Management oversight and tracking activities
  ≥ Quality Assurance and Configuration Management Audits
  ≥ Systems Test Reports

◆ Require that the Supplier's internal procedures are documented and followed throughout the conduct of the project

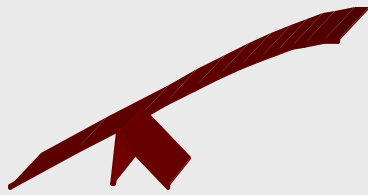# Identify Deliverable Requirements

◆ Deliverables include the following:
  - ≥ Project Plan
  - ≥ Risk Management Plan
  - ≥ Quality Assurance Plan
  - ≥ Configuration Management Plan
  - ≥ Integration and Systems Test Plan
  - ≥ Architectural Specification
  - ≥ Design Documents
  - ≥ Engineering Notes
  - ≥ Description of standards followed
  - ≥ Description of methods used
 - ≥ Description of process followed
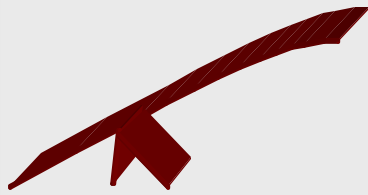
Identify Deliverable Requirements - 2

$\geq$ Technical Documents

$\uparrow$ corresponding to a life-cycle phase

$\uparrow$ Draft and Final

$\geq$ Project Status Reports/Frequency

$\uparrow$ Actual vs. Planned

- size

- effort

- cost

- schedule

- critical computer resources

- facilities and support tools required

Identify Deliverable Requirements - 3

≥ Other Reports

   ↑ Configuration Management Status Accounting Reports

   ↑ Functional Configuration Audit Reports

   ↑ Physical Configuration Audit Reports

   ↑ Quality Assurance Audits and Non-compliance Status

   ↑ Issues Management

   ↑ Risk Management

≥ Management Oversight Review Meetings

   ↑ frequency

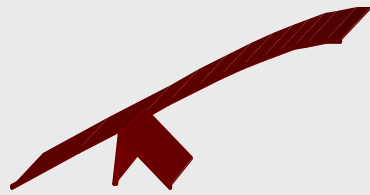   ↑ topics to be discussed
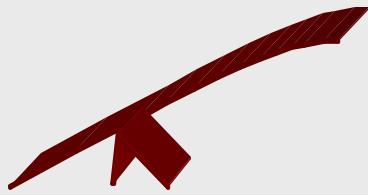
Supplier Evaluation Criteria
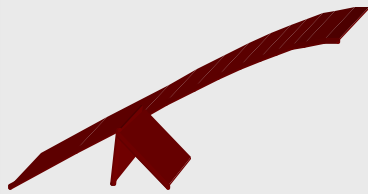
Supplier Evaluation Criteria

◆ Suppliers are selected based on their ability to perform the work according to predefined evaluation criteria

- ≥ Prior documented performance on similar applications

- ≥ Geographic location

- ≥ Management capabilities

- ≥ System Engineering capabilities

- ≥ Software Engineering capabilities

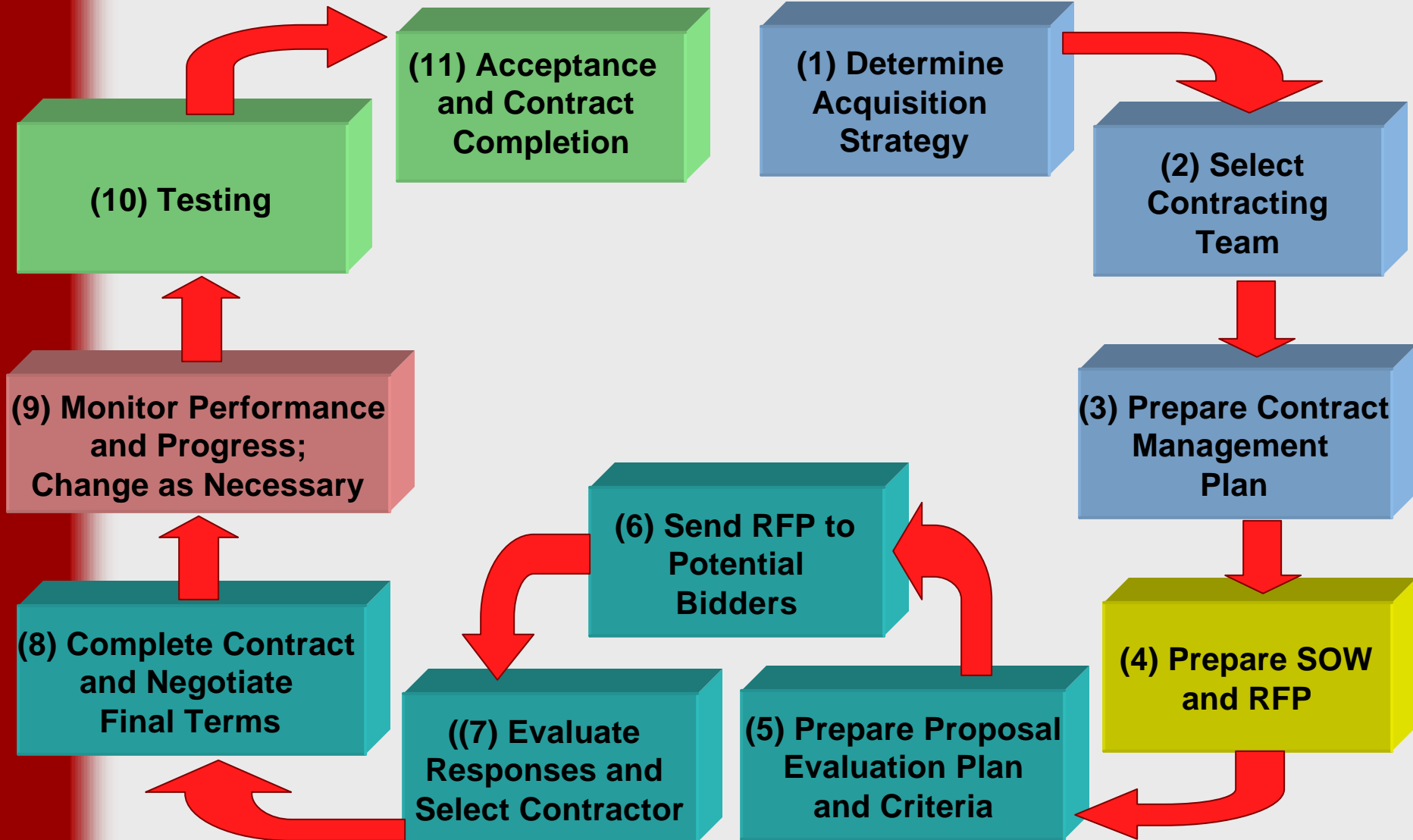- ≥ Quality Management capabilities (Quality Assurance, Configuration Management, Measurement and Analysis
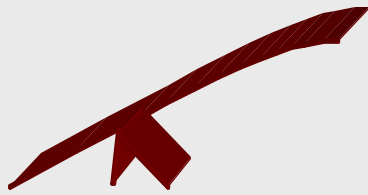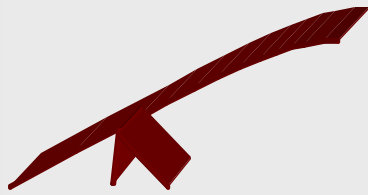
Supplier Evaluation Criteria - 2

- $\geq$ Knowledge, skills, and numbers of staff available to perform the work

- $\geq$ Available resources (facilities, hardware, software, training)

- $\geq$ Capability evaluation

- $\geq$ Project's ability to work with the proposed supplier

- $\geq$ Willingness to share development and business risk

The Contract Management Plan & Statement of Work

Contract Management Steps

(11) Acceptance and Contract Completion

(1) Determine Acquisition Strategy

(2) Select Contracting Team

(10) Testing

(3) Prepare Contract Management Plan

(9) Monitor Performance and Progress; Change as Necessary

(6) Send RFP to Potential Bidders

(4) Prepare SOW and RFP

(8) Complete Contract and Negotiate Final Terms

((7) Evaluate Responses and Select Contractor

(5) Prepare Proposal Evaluation Plan and Criteria

Statement of Work

◆ The SOW should

≥ Clearly specify the work to be done by the Supplier

≥ Provides both the Supplier and the Buyer with as much detail as possible as to the needs of the Buyer's organization

≥ Describe the technical requirements for the software system needed

≥ Facilitate the preparation of responsive proposals

↑ Legal requirements, proposal instructions, evaluation instructions, performance management guidelines
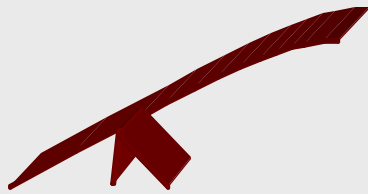
Request for Proposal

◆ The Contract Management Plan serves as input to the RFP along with the SOW

◆ The RFP

 ≥ Is the heart of the contracting process

 ≥ Aids in the selection of a bidder, and the contract administration after award

 ≥ Provides the basis for the contract and the work to be completed

 ≥ Clearly explains all the deliverables expected of the Supplier
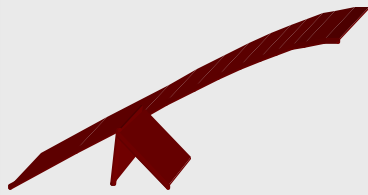
Request for Proposal Outline

◆ Introduction

◆ Statement of Work

◆ Supplier's Software Quality Assurance responsibility

◆ Supplier's Software Configuration Management responsibility

◆ Contract Administration and Clauses

◆ Instructions to Suppliers

◆ Pricing

◆ Proposal Evaluation
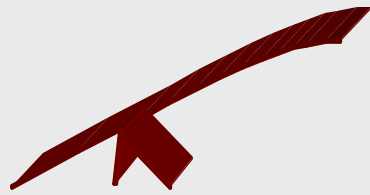
Establishing the Supplier Agreement
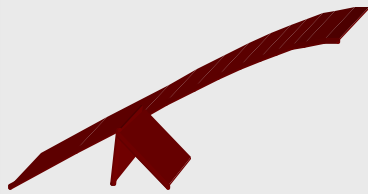
Establish the Supplier Agreement

◆ Establishing and maintaining the supplier agreement provides the supplier with the project needs, expectations, and measures of effectiveness

◆ The supplier agreement typically includes:

  ≥ Statement of work for the Supplier

  ≥ Terms and conditions

  ≥ List of deliverables, schedule, and budget

  ≥ Defined acceptance process including acceptance criteria
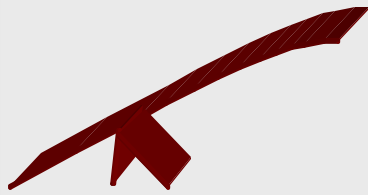
Establish the Supplier Agreement - 2

≥ Identification of project and supplier representatives responsible and authorized to agree to changes to the supplier agreement

≥ Identifying the process for handling requirements change requests from either side

≥ Identifying processes, procedures, guidelines, methods, templates, etc., that will be followed

≥ Identifying critical dependencies between the project and the supplier
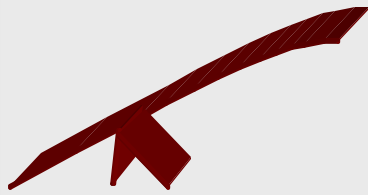
# Establish the Supplier Agreement - 3

≥ Identifying the form, frequency, and depth of project oversight the supplier can expect from the project

↑ includes evaluation criteria to be used in monitoring the supplier's performance

≥ Identifying the supplier's responsibilities for ongoing maintenance and support of the acquired products

≥ Identifying warranty, ownership, and usage rights for the acquired products
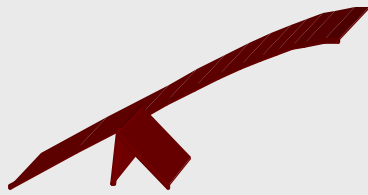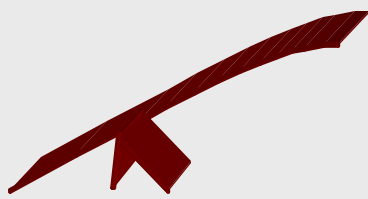
Commercial-Off-The-Shelf Products
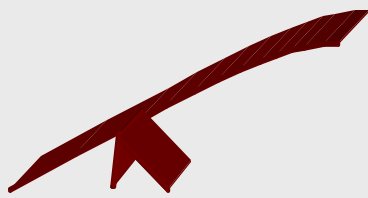
Acquiring Commercial Off-The-Shelf (COTS) Products

◆ In the event that off-the-shelf products are desired, care in evaluating and selecting these products and the choice of vendor may be critical to the project

◆ Evaluate candidate products against the associated requirements considering:

- $\geq$ Functionality

- $\geq$ Performance

- $\geq$ Quality

- $\geq$ Reliability

- $\geq$ Terms and conditions of warranties for the products

- $\geq$ Supplier's responsibilities for ongoing maintenance and support of the projects
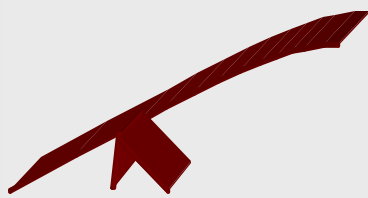
Acquiring Commercial Off-The-Shelf (COTS) Products - 2

◆ Assess the supplier's past performance and ability to deliver

◆ Select the off-the-shelf product to be acquired

◆ Develop supplier agreement in addition to standard product license as necessary

  ≥ On-site support such as response to queries and problem reports

  ≥ Maintenance support including support after the product is withdrawn from general availability

◆ Identify risks associated with the selected off-the-shelf product and the supplier agreement

Acquiring Commercial Off-The-Shelf (COTS) Products - 3

◆ Analyze benefits and impacts that may result from future product releases

◆ Review and obtain agreement with those affected by the selected off-the-shelf agreement and the supplier agreement
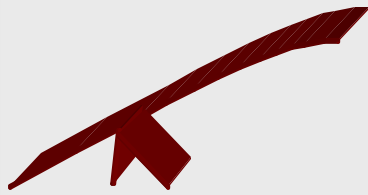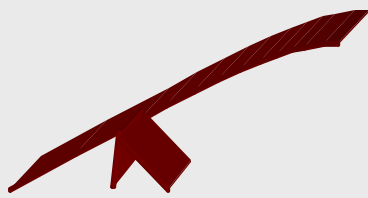
Progress and Performance Reviews
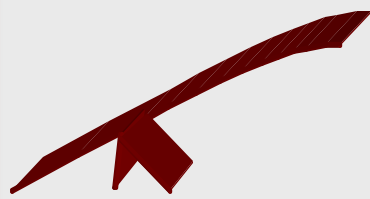
Technical and Management Reviews With the Supplier

◆ Periodic reviews are conducted between the project's management team and the supplier's management team to review progress as defined in the supplier agreement

  ≥ Visibility into the needs and desires of the product's customers and end users is provided

  ≥ Technical, cost, staffing, and schedule performance are reviewed

  ≥ Technical issues are communicated and resolved

  ≥ Critical computer resources are reviewed
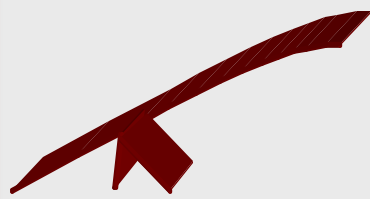
Technical and Management Reviews With the Supplier - 2

≥ Critical dependencies are reviewed

≥ Nonconformance to the supplier agreement is addressed

≥ Project risks are addressed

≥ Feedback on supplier performance is provided

≥ Changes to the supplier's statement of work, terms and conditions, and other commitments are resolved

Supplier Progress and Performance Monitoring

◆ The supplier's management and technical activities and work products are evaluated on a periodic and event-driven basis against the supplier agreement

- ≥ Recommendations for performance improvement are made as necessary

- ≥ Awards or penalties are provided to the supplier as appropriate

- ≥ Results of evaluations are used as input for future supplier selection
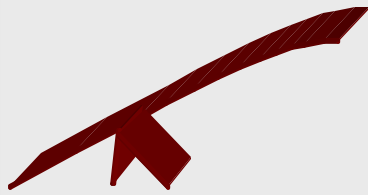
Supplier Quality Assurance Monitoring

◆ The project's Quality Assurance representative monitors the supplier's quality assurance activities

≥ The supplier's plans, resources, procedures, and standards for quality assurance are periodically reviewed to ensure they are adequate to monitor the supplier's own performance
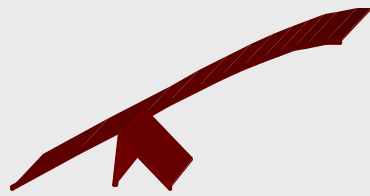
Supplier Configuration Management Monitoring

◆ The project's Configuration Management representatives monitor the supplier's configuration management activities

≥ The project and the supplier coordinate their activities on matters relating to configuration management to ensure that the supplier's products can be readily integrated or incorporated into the project environment
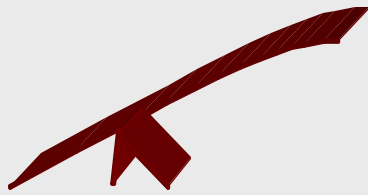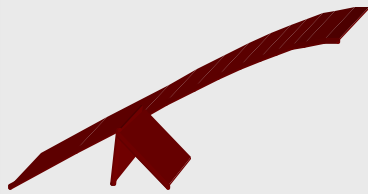
Acceptance Criteria & Acceptance Testing
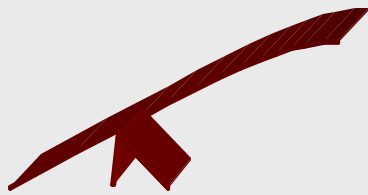
Acceptance Criteria

◆ Acceptance Criteria should be part of the requirements capture and specification process

≥ Who will perform the acceptance testing

≥ What environment or portion of the user's environment must be exercised to satisfy the acceptance criteria

≥ What process will be followed if errors are found

≥ What classification of errors must be fixed before the system will be accepted

≥ What classification of errors may allow the system to be accepted in the event that workarounds can be provided

Acceptance Testing on Supplier Deliveries

◆ Acceptance reviews, tests, and configuration audits must be conducted for the acquired products prior to their being accepted

- ≥ Obtain agreement with relevant stakeholders on the acceptance procedures before the acceptance testing begins

- ≥ Verify through reviews, tests, and functional and physical audits that the acquired products satisfy their technical, non-technical, quality, and usability requirements

- ≥ Document the results of the acceptance testing process

- ≥ Establish and obtain supplier agreement on an action plan for any acquired work products that do not pass the acceptance testing process

- ≥ Identify, document,and track action items to closure
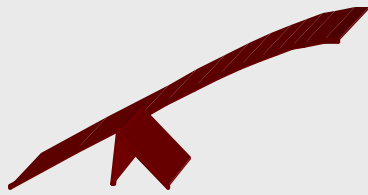
Transitioning From Supplier to Buyer
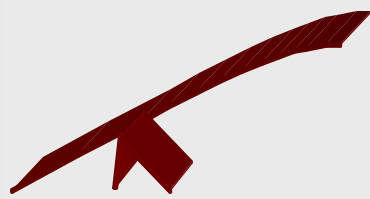
Transitioning the Acquired Product From the Supplier to the Project

◆ Monitor the transition of the acquired products from the supplier to the project

≥ Ensure that the appropriate facilities to receive, store, use, and maintain the acquired products are available

≥ Ensure that the storing, distributing, and use of the acquired products is performed according to the terms and conditions specified in the supplier agreement
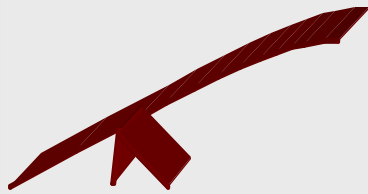
Summary

◆ Supplier Agreement Management is about deciding:

≥ What is needed to manage your project's activities?

≥ What part of your project's requirements would you like to be satisfied outside of your project boundaries?

≥ What is the effort and cost of acquiring a COTS solution?

≥ What is the effort and cost to manage a supplier?

≥ Where outside of your project's boundaries will you find the most balanced solution for your need?
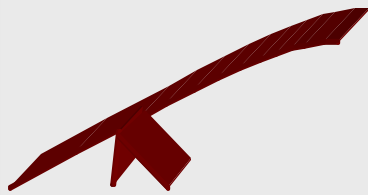
Summary - 2
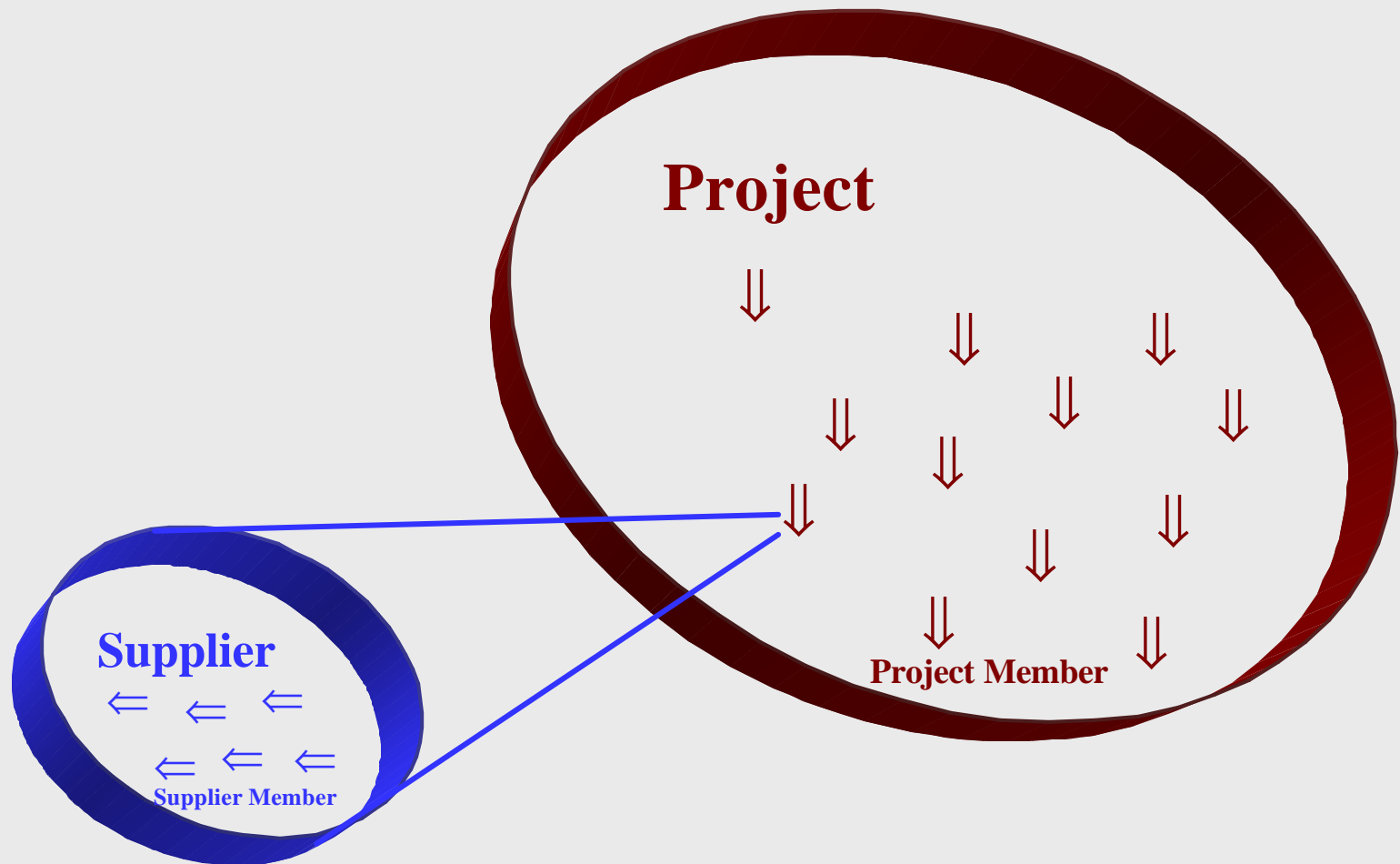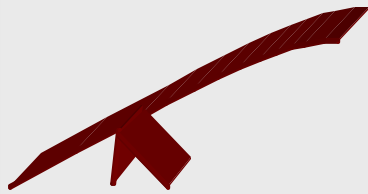
Tim Kasse
Kasse Initiatives LLC

30 West Sheffield Avenue
Gilbert, Arizona 85233
U.S.A.
Tel: +1 480 855 1101

Niedereschacher Strasse 6
78052 Villingen-Schwenningen
Germany
Tel: +49 7721 407 851

E-mail: kassetc@aol.com
Web Site: www.kasseinitiatives.com